What is Claimed is:

1. A method of determining whether a human female subject is at increased risk of having ovarian cancer, comprising:
   (a) removing a test biological sample from said subject;
   (b) determining the amount of eosinophil-derived neurotoxin (EDN) in said test biological sample;
   (c) comparing the amount of EDN determined in step (b) with the amount in one or more control biological samples; and
   (d) concluding that said subject has or is likely to develop ovarian cancer if the amount of EDN in said test biological sample is significantly higher than in said control biological samples.

2. The method of claim 1, wherein said test biological sample is blood or plasma.

3. The method of claim 1, wherein said test biological sample is urine.

4. The method of claim 1, wherein said test biological sample is fluid removed from an ovary of said subject.

5. The method of any one of claims 1-4, wherein the determination of EDN amount is accomplished using an immunoassay.

6. The method of any one of claims 1-4, wherein the amount of EDN is determined by mass spectrometry.

7. The method of any one of claims 1-4, wherein the amount of EDN is determined by surface enhanced laser desorption/ionization mass spectrometry.

8. The method of claim 1, wherein the amount of EDN is determined using the polymerase chain reaction (PCR) to determine EDN mRNA levels.

9. The method of claim 8,wherein at least one of the primers used in performing said PCR codes for the amino acid sequence of SEQ ID NO:3.

10. The method of any one of claims 1-4, further comprising performing at least one additional assay for a diagnostic marker of cancer or other disease.

11. The method of claim 10, wherein said diagnostic marker is selected from the group consisting of: prostate specific antigen; BRCA-1 and BRCA-2.

12. The method of claim 10, wherein said diagnostic marker is CA 125.

13. The method of any one of claims 1-4, wherein said subject is selected for testing based upon a clinical determination that she is at an elevated risk of having or developing ovarian cancer.

14. A method of determining whether a biological sample derived from a patient with an elevated level of EDN is indicative of the presence of a malignant or a benign ovarian growth, comprising quantitating the amount of EDN monomer and EDN dimer in said sample and concluding that said sample is indicative of the presence of a malignant ovarian growth if either:

a) the ratio of Dp/Mp is 2 or greater, where Dp=dimer protein and Mp=monomer protein; or

b) the ratio Dg/Mg is greater than 3 where Dg=glycosylation associated with EDN dimer and Mg=glycosylation associated with EDN monomer.

15. A method of determining whether a biological sample derived from a patient with an elevated level of EDN is indicative of the presence of a malignant or a benign ovarian growth, comprising quantitating the total amount of glycosylation associated with EDN in said sample and concluding that it is indicative of a subject with a malignant ovarian growth if said total the amount of glycosylation is significantly greater than the amount in one or more control samples derived from subjects with a benign ovarian growth.

16. The method of either claim 14 or claim 15, wherein said test biological sample is blood or plasma.

17. The method of either claim 14 or claim 15, wherein said test biological sample is is urine.

18. The method of either claim 14 or 15, wherein said test biological sample is fluid removed from an ovary of said subject.